

REMARKS/ARGUMENTS

The present amendment is in response to the Office Action dated February 15, 2006, and is filed in conjunction with a Request for Continued Examination.

Applicants have filed, herewith, two Declarations under 37 C.F.R. § 1.132.

Applicants have also filed herewith an Information Disclosure Statement, and a three month extension of time.

Applicants wish to thank the Examiner for his helpful telephone conversation on April 19, 2006, with Applicants' undersigned representative. At this time, Applicants' representative discussed the possibility of obtaining comparative data for measurement of PRR values to advance an allowance in this case. Comparative data has been used to overcome the pending claim rejections, as discussed below.

Claims 1-9, 18-24 and 26-36 are active in the present application. Claims 10-20 and 22-25 have been withdrawn by the Examiner. Claims 1, 7, 8, 23, 24, 26, 27, 30 and 31 have been currently amended to correct typographical errors, and/or to clarify claim language. New Claims 34-36 have been added. Support new Claims 34-36 can be found throughout the specification and in the original claims, and particularly on pages 1, 4 and 9 of the specification. No new matter is believed to have been introduced by the amended and new claims.

The specification (Table IIA) was amended as shown above, to correct the units of hydrogen flow to "liter per minute." This amendment corrects a typographical error. No new matter is believed to have been introduced by the amendment to the specification.

Applicants have also filed herewith an Information Disclosure Statement (IDS). Applicants request that the Examiner acknowledge the references cited in the IDS, by returning to Applicants' undersigned representative a signed, initialed and dated copy of the corresponding PTO/SB/08 sheet.

Claim Rejections under 35 U.S.C. § 102(b) and § 103(a)

The Examiner rejected Claims 1-9 and 21 under 35 U.S.C. § 102(b), as anticipated by, or, in the alternative, under 35 U.S.C. § 103(a), as obvious over, U.S. Patent 4,343,755 to Miller et al. (hereinafter the '755 patent). Applicants respectfully traverse for the following reasons.

Claim 1 of Applicants' invention is directed to a shear thinning ethylene/ α -olefin interpolymer, having polymerized therein, ethylene, at least one α -olefin monomer, and, optionally, at least one diene monomer. The ethylene/ α -olefin interpolymer is characterized by a Processing Rheology Ratio (PRR) of at least four. A PRR of at least four is an indication that long-chain branching is present in the interpolymer (for example, see page 1, lines 5-8; and page 4, line 20 to page 5, line 3 of the present specification).

Applicants have filed herewith two Declarations under 37 C.F.R. § 1.132, one from Robert J. Jorgensen (hereinafter the Jorgensen Declaration) and the other from Morgan M. Hughes (hereinafter the Hughes Declaration). Two ethylene/1-butene copolymers (Copolymer 1 and Copolymer 2) were polymerized, each similar in polymer branching distribution to that of Example 3 (Run No. 3) of the '755 patent (see Tables A and B). The two polymerizations are discussed in the Jorgensen Declaration, and rheological measurements on the two copolymers are discussed in the Hughes Declaration. Example 3 of the '755 patent was chosen out of all the examples listed in Table A, since this particular example had the lowest hydrogen to ethylene ratio, and was thus the closest experimental example, in terms the ratio of hydrogen to ethylene, to those polymerizations examples disclosed in Applicants' invention (for example, see page 32, line 27 to page 33, line 2 of the present specification).

As discussed in the Jorgensen Declaration, the catalyst disclosed in the '755 patent to prepare Example 3, and the catalyst, second generation, to this catalyst, are both Ziegler-Natta type catalysts, which produce linear ethylene/ α -olefin copolymers that do not have measurable amounts of long chain branching. Moreover, the catalysts disclosed in the '755 patent (for example, see column 8, line 21 to column 13, line 18; and column 20, line 54 to column 24, line 9) are Ziegler-Natta type catalysts which produce linear ethylene/ α -olefin copolymers that do not have measurable amounts of long chain branching. Moreover, as showed in the Hughes Declaration, the comparative ethylene/1-butene copolymers (Copolymer 1 and Copolymer 2) had PRR values less than four. As discussed in the Hughes Declaration, the PRR value for each copolymer was calculated using an extrapolated Mooney Viscosity at 125°C, and it is estimated that, due to the crystalline nature of

each copolymer, the Mooney at 125°C should be significantly higher than the extrapolated value. A higher Mooney at 125°C would, in turn, decrease, even further, the calculated PRR value for each copolymer.

The Ziegler-Natta type catalysts disclosed in the '755 patent produce linear ethylene/ α -olefin copolymers that do not have measurable amounts of long chain branching. Thus, the copolymers of the '755 patent should have PRR values lower than four. In addition, ethylene/1-butene copolymers, similar in branching distribution to that of Example 3 of the '755 patent (which uses the lowest molar ratio of hydrogen to ethylene), have been shown to have PRR values much lower than 4. Thus, a PRR value of at least four is not an inherent feature of the ethylene/ α -olefin copolymers disclosed in the '755 patent. Moreover, since this patent discloses the use of Ziegler-Natta type catalysts that produce linear ethylene/ α -olefin copolymers which do not have measurable amounts of long chain branching, Applicants' claimed interpolymers, which have significant amounts of long chain branching, are not obvious from the teachings of this patent. Also, the experimental polymerizations (Examples 1-14 of Table A) use very high levels of hydrogen, ranging from 0.148 to 0.566 mole hydrogen per mole ethylene, which corresponds to 12.9 to 36.1 mole percent hydrogen, based on the sum molar amounts of hydrogen and ethylene. Such high hydrogen levels do not favor the formation of long chain branching. Thus, the disclosed catalysts of the '755 patent and/or the high levels of hydrogen used in the disclosed polymerizations of the '755 patent teach away from the formation of interpolymers with significant amounts of long chain branching, or PRR value of at least four.

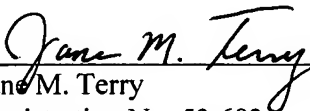
Therefore, for at least the above reasons, the '755 patent does not teach or suggest pending Claim 1. In addition, since Claims 2-9, 18-24 and 26-36, each depend, directly or indirectly, from Claim 1, the '755 patent does not teach or suggest these claims. Thus, Applicants request that the rejection be withdrawn.

Applicants respectfully submit that the present amendment is now in condition for allowance, and request early notice of such action.

If further issues remain, Applicants respectfully request that the Examiner call Applicants' undersigned representative.

Respectfully submitted,

Date: August 15, 2006


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